Using the National Park Service ERMN/MIDN Graphical Weather Interface
http://climate.met.psu.edu/gmaps/NPS_DEVELOPMENT/

This tutorial provides the user with instructions on how to navigate the National Park Service graphical weather interface developed by the Pennsylvania State Climate Office. In this tutorial, you will become familiar with the interface and be able to do the following:

- **Change base (background) layers**
- **Toggle side menu**
- **Select a network**
- **Select a park**
- **Filter stations by category**
- **Pan and zoom**
- **View the site information and metadata for an individual station**
- **Understand and use "Data Quicklooks"**
- **View monthly normals based on 30 years of data (1971-2000)**
- **Plot 30/90/365 day daily temperatures**
- **Plot 30/90/365 day daily precipitation**
- **Retrieve the current 5-day NWS forecast for a station**
- **Plot hour-by-hour forecasts (temp, dwpt, wind, etc.) for a station**
- **Retrieve data in *.csv, *.xls, and *.html format**
- **View network description**
- **View parameter description**
- **Locate closest site with wind roses**

Change base (background) layers
You can change the default Google maps view through the Google maps interface to a *satellite* view or a *hybrid* view of both roads and weather satellite pictures by clicking on the respective view in the upper right corner of the map. You can also switch the base layers by clicking on "Layers Menu On" in the upper left corner of the application. A window will pop-up (Figure 1) and the user has the option of displaying different Google maps layers, USGS layers, radar overlays, and weather satellite overlays.

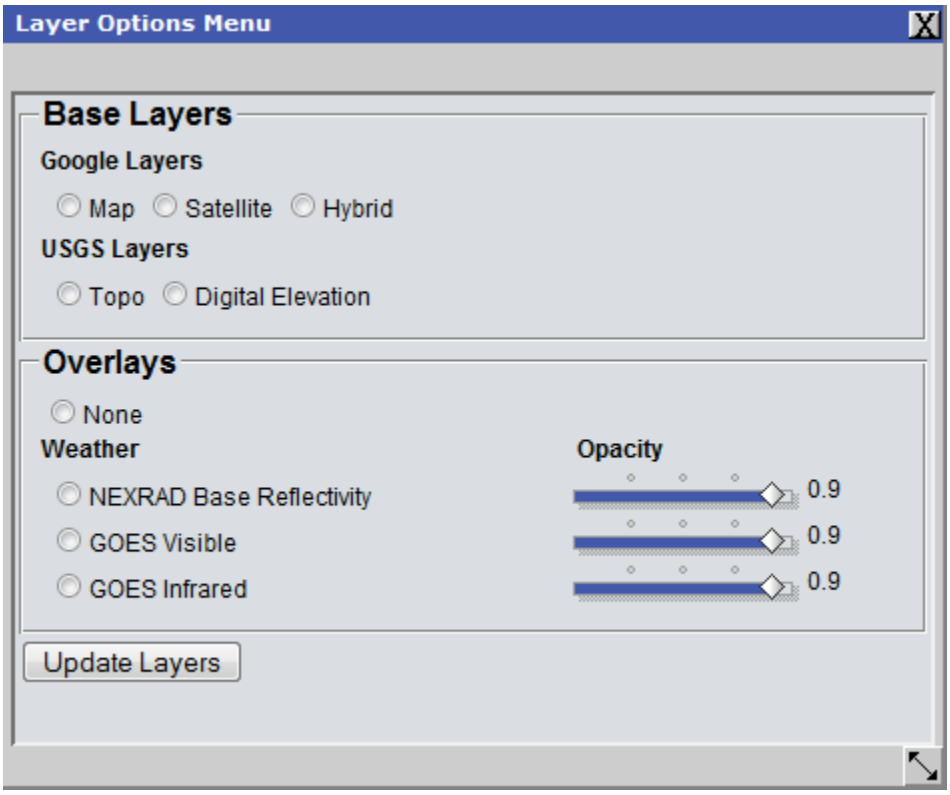


Figure 1: Example of Layers Menu.

Toggle right menu:
You can make the right menu disappear by clicking on "Parks Menu Off". To display the right menu again, click on "Parks Menu On"

Choose a network:
Choose a network: On the right hand toolbar, select *ERMN* for Eastern Rivers and Mountains Network, or *MIDN* for Mid-Atlantic Network.

Choose a park site:
Once a network is chosen, all of the parks in the chosen network will appear in a box below the *network list*. Click on the park you would like to view. This is called the *park view* (Figure 2).

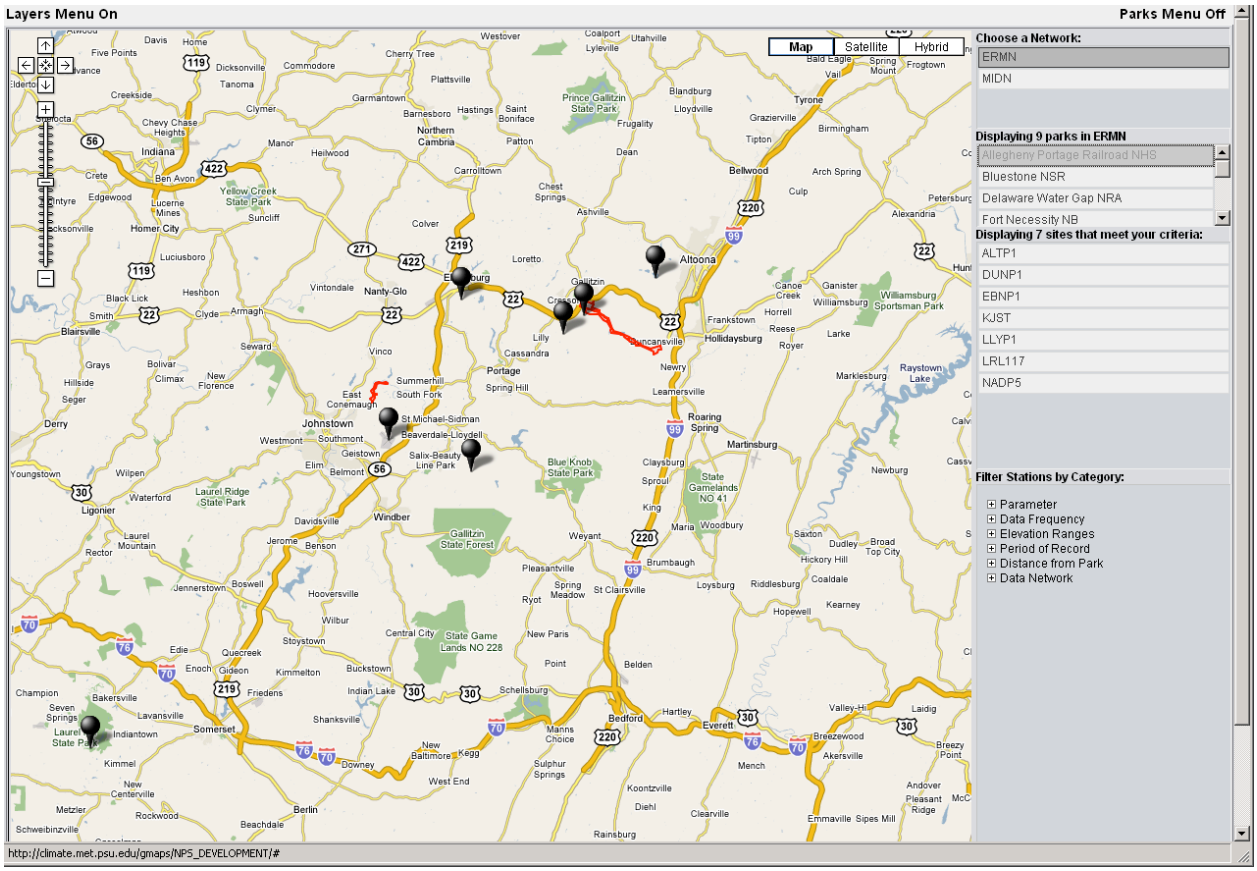


Figure 2: Shows *park view* with different sites within each park.

From *park view*, you can now view the weather stations which best represent the selected park's environmental and climatic conditions based on a reviewed technique and acquire all available data for these locations. The stations are displayed on the map as "pins" and listed in the right hand tool bar. Note that you can "mouse over" the list of stations in the tool bar and they will be highlighted on the map.

Before choosing a particular weather station, you can filter the weather stations displayed by using the options on the bottom of the right hand toolbar:

- Reporting parameter (i.e. which stations report temperature, precip, etc)
- Data frequency (i.e. sub-hourly, hourly, daily)
- Elevation ranges (i.e. 0-500 ft, 500-1000 ft, etc.)
- Period of Record (i.e. 0-5 years, 5-10 years, etc.)
- Distance from Park (i.e. 0-1 miles, 1-5 miles, etc.)
- Data network (i.e. FAA, CWOP, NADP, etc.)

Pan and zoom:
Pan over the map by holding the left mouse button down and dragging the cursor around. To zoom in and out, use the zoom controls in the upper left corner of the map.

View network description:
To view a detailed description of each network, click *Filter Stations by Category*, then click on the 'plus' ⊞ icon to the left of data network, and click on a network name to see its descriptor (Figure 3).

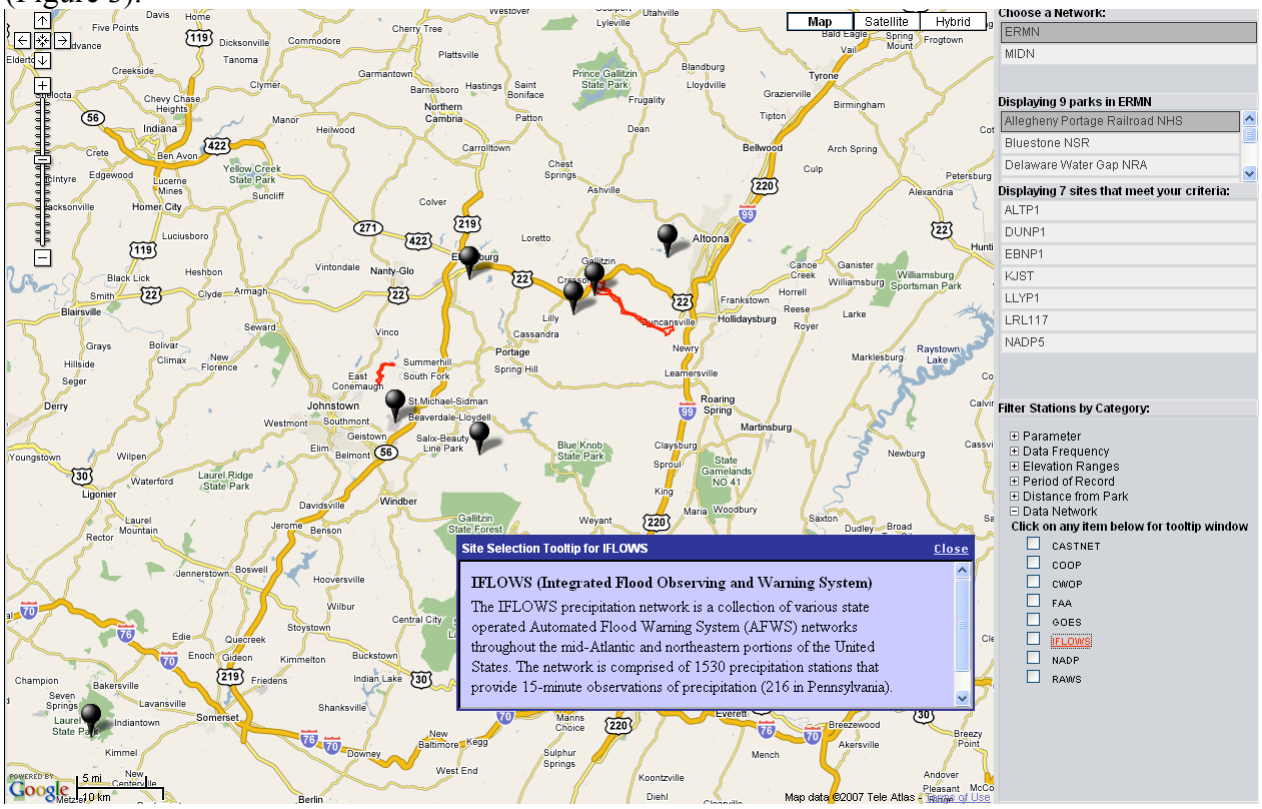


Figure 3: Example of a network description box.

View parameter description:
To view a detailed description of each parameter, click *Filter Stations by Category*, then click on the ⊞ icon left of *Parameter*, and click on the name of a parameter to see its descriptor (Figure 4).

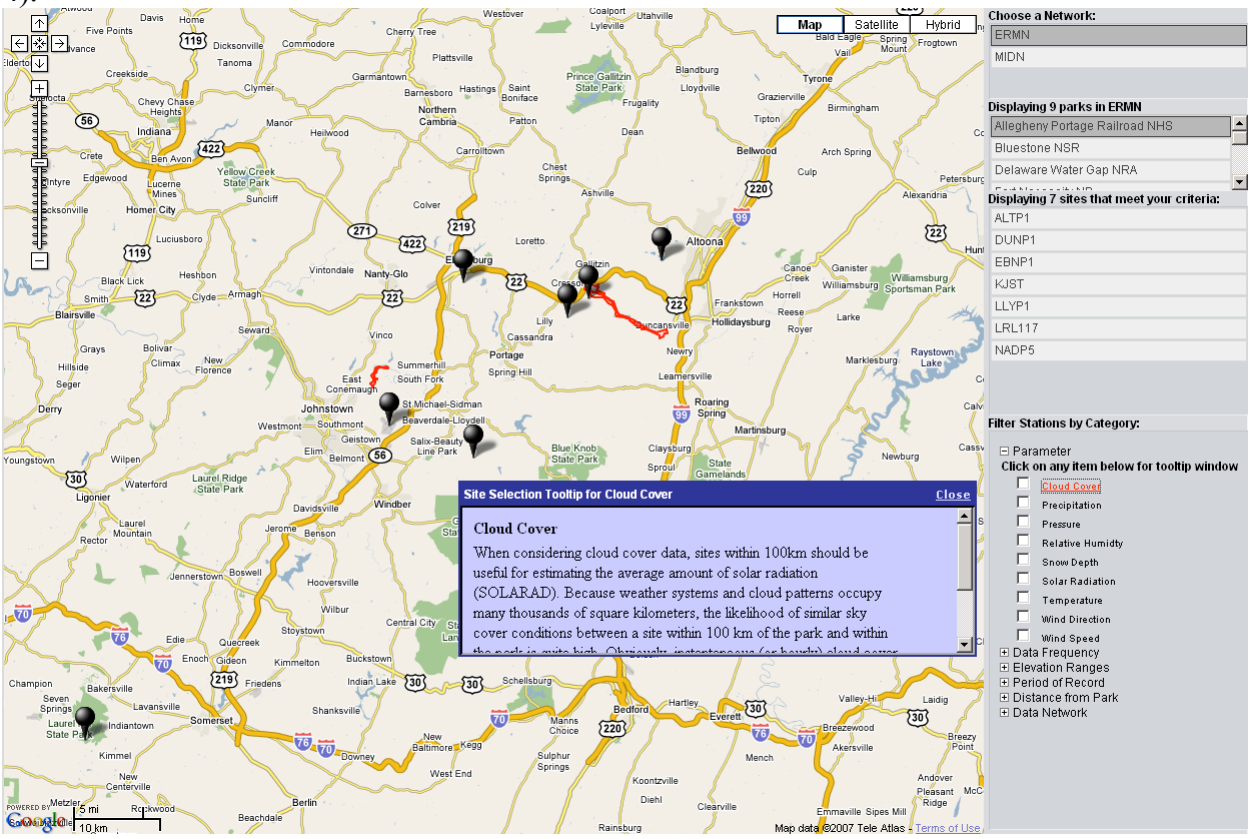


Figure 4: Example of parameter description box.

View information for an individual weather station:
Go into *station view* by clicking on a station icon in *park view* on the map. A pop-up window will appear with all of the information for that station. The information is organized by five *tabs* The default tab is the metadata tab (Figure 5). The metadata tab provides information about the station, including its location, latitude/longitude, county, elevation, data network, period of record, parameter measured, frequency, and the location's soil, land use, and slope.

The following is an example of KJST-Johnstown, an FAA station in the Allegheny Portage Railroad NHS and Johnstown Flood NM park domains.

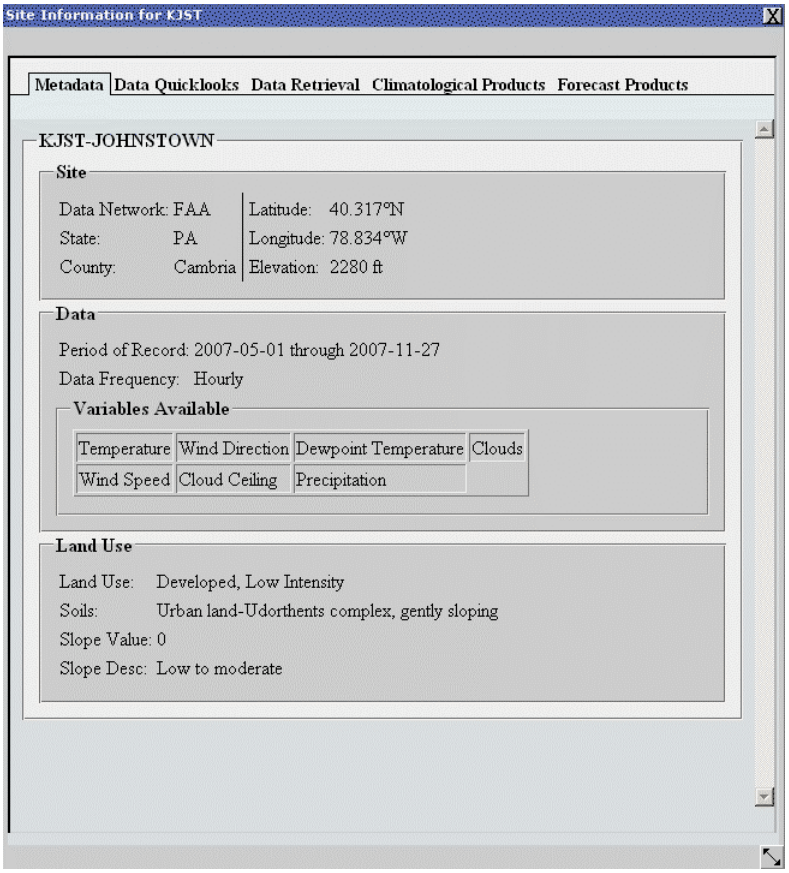


Figure 5: Station view box showing *Metadata* tab.

Data Quicklooks:

The *Data Quicklooks* tab is an easy way to view current data, historical data, and graphical summaries of the station.

Data Quicklooks (continued)

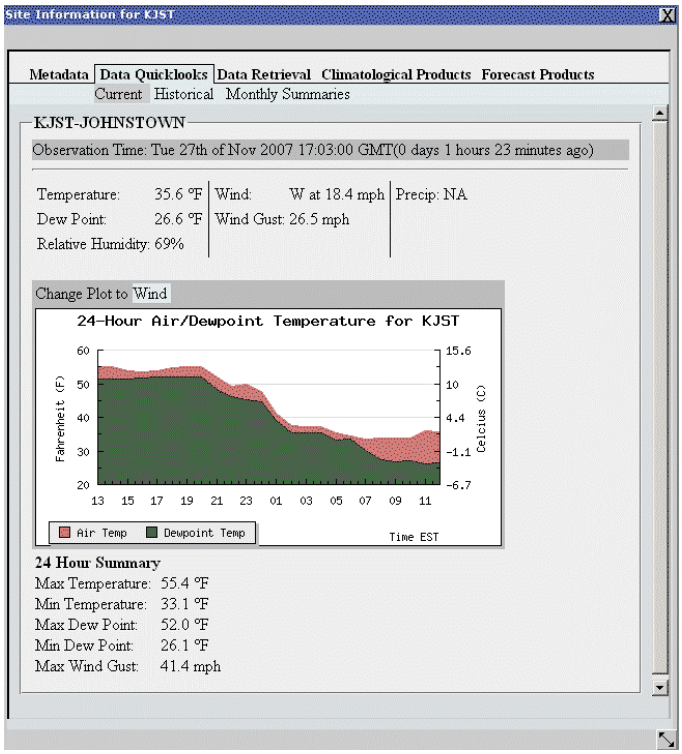


Figure 6: Station view box showing *Current Data Quicklooks* tab of a FAA site.

Current Data: Under the *Data Quicklooks* tab, click *Current*, and the most recent observations will appear as well as a graph showing the past 24 hours of data (Figure 6). Just above the graph where the text reads *Change Plot to Wind*, click on the *Wind* text to change the graph to display different parameters. This feature automatically scrolls through available parameters/graphs as you click.

Data Quicklooks can look a bit different depending on which network is being accessed. The screenshot above shows the current Quicklook of an FAA station (Figure 6) whereas the following screenshot (Figure 7) shows an example of a *Data Quicklook* of a COOP station. These differences are due to the type and frequency of data collection among weather networks. For example, COOP data is collected on a daily basis and FAA data collected hourly.

Data Quicklooks (continued)

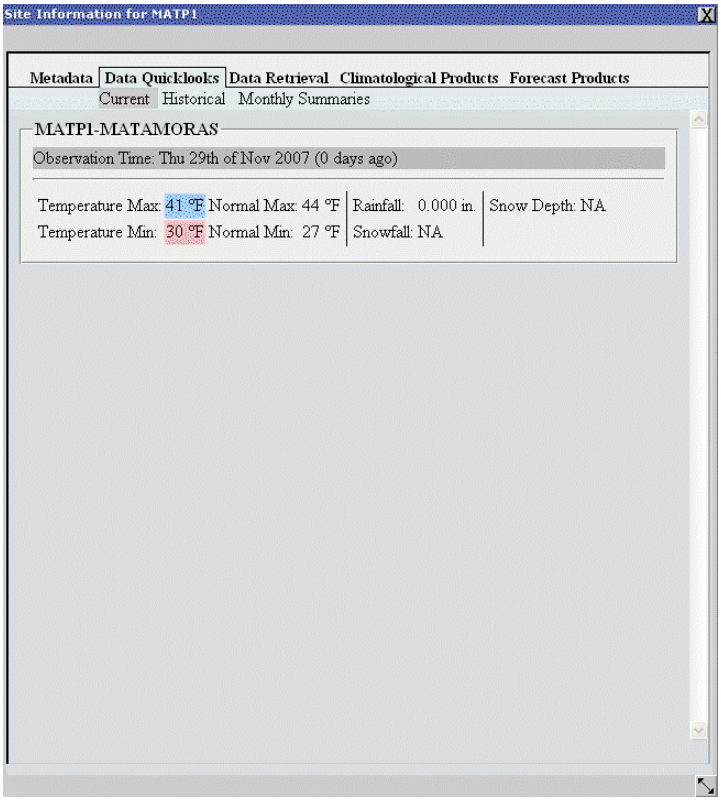


Figure 7: Example of a *Current Data Quicklook* of a COOP site.

Historical data: Under the *Data Quicklooks* tab, click *Historical*. You will be prompted to enter a date and the number of days you would like data displayed and graphed (Figure 8). The following example shows that a user was interested in weather data from KJST-Johnstown for May 1, 2007 and the following 2 days. The user must input the date in the format of YYYY-MM-DD, followed by selecting the number of days to view for as much as two weeks.

Data Quicklooks (continued)

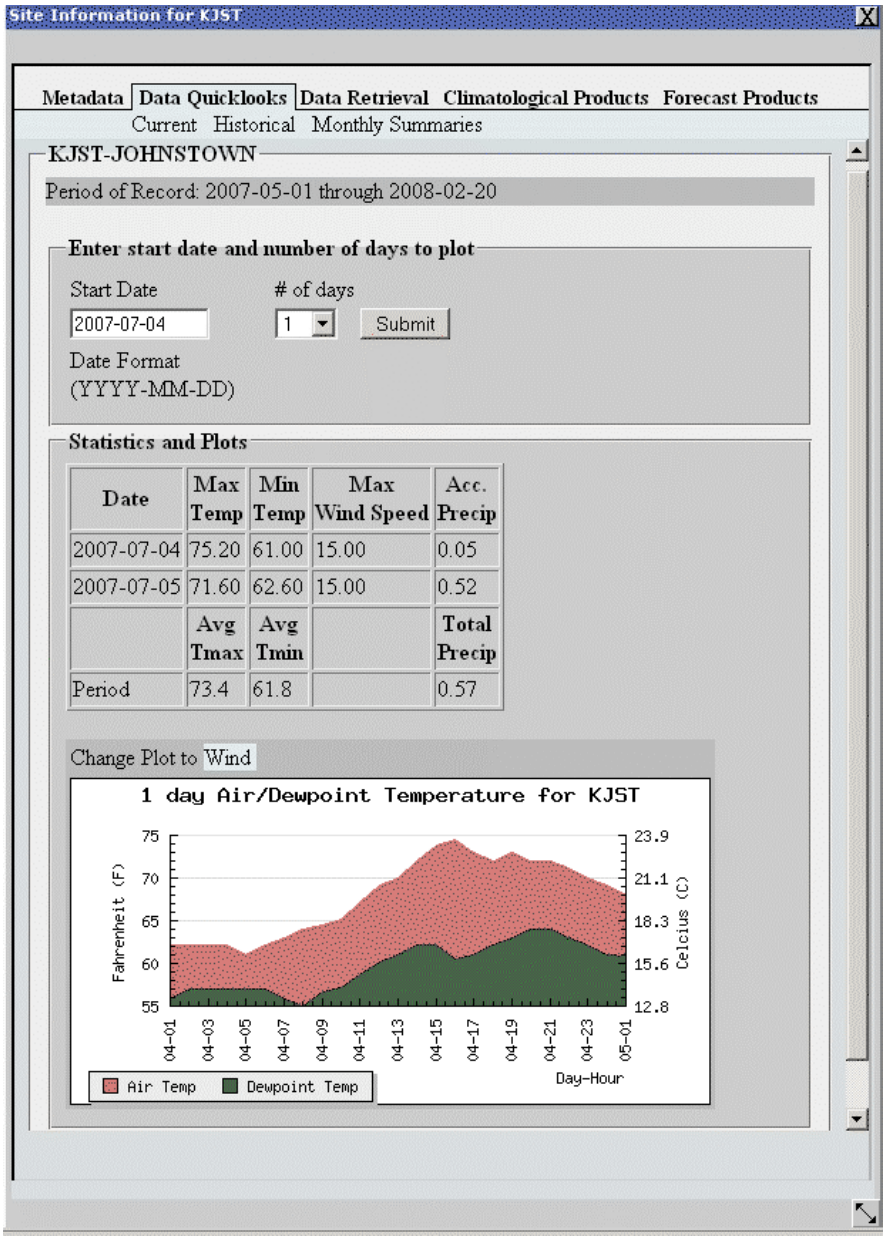


Figure 8: Shows the *Historical Data Quicklook* tab with example date input format for 2007-07-04.

Monthly Summaries: Under the *Data Quicklooks* tab, click *Monthly Summaries* (Figure 9). You will first see a summary for the current month and can also choose (via the *dropdown lists* at the top left) data for any other month in that station's period of record.

In a series of columns and places you will see "normal" values displayed. These refer to the climatological normals for that parameter based on the most recent 30 years of data.

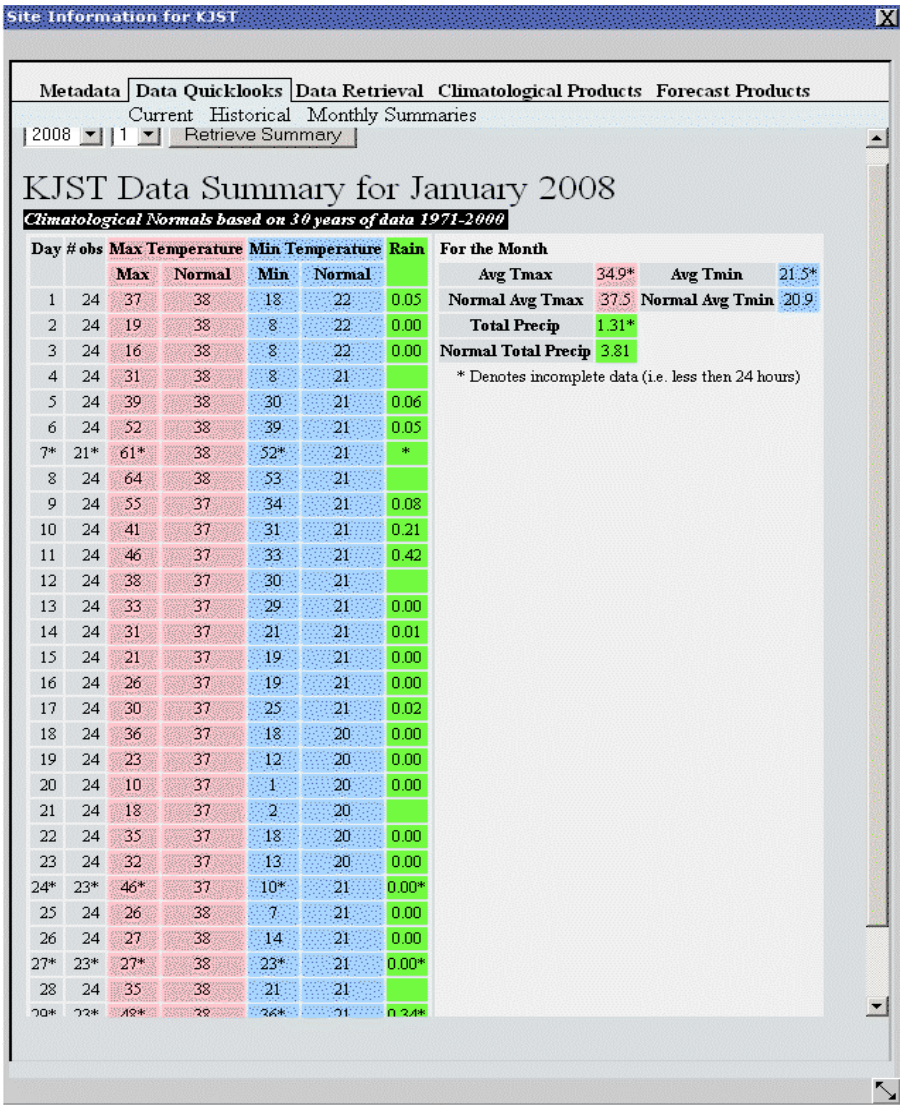


Figure 9: Shows the *Monthly Summaries Quicklook* tab.

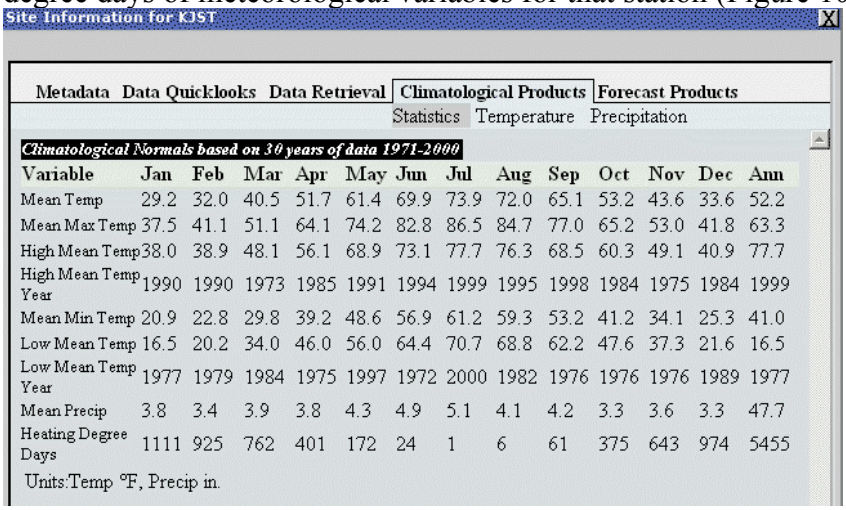
Climatological products:

The climatological products tab provides the 30 year (1971-2000) climatological normals for that station. Summary statistics for precipitation and temperature are available as are graphs that combine plots of "normal" with "current" station data to depict, for example, deviations from normal

View monthly normals based on 30 years of data (1971-2000):

Climatological Products -> Statistics

When the user requests the climate statistics of a station, the interface will display the monthly averages, extremes, and in some cases derived parameters such as heating degree days of meteorological variables for that station (Figure 10).



Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
Mean Temp	29.2	32.0	40.5	51.7	61.4	69.9	73.9	72.0	65.1	53.2	43.6	33.6	52.2
Mean Max Temp	37.5	41.1	51.1	64.1	74.2	82.8	86.5	84.7	77.0	65.2	53.0	41.8	63.3
High Mean Temp	38.0	38.9	48.1	56.1	68.9	73.1	77.7	76.3	68.5	60.3	49.1	40.9	77.7
High Mean Temp Year	1990	1990	1973	1985	1991	1994	1999	1995	1998	1984	1975	1984	1999
Mean Min Temp	20.9	22.8	29.8	39.2	48.6	56.9	61.2	59.3	53.2	41.2	34.1	25.3	41.0
Low Mean Temp	16.5	20.2	34.0	46.0	56.0	64.4	70.7	68.8	62.2	47.6	37.3	21.6	16.5
Low Mean Temp Year	1977	1979	1984	1975	1997	1972	2000	1982	1976	1976	1976	1989	1977
Mean Precip	3.8	3.4	3.9	3.8	4.3	4.9	5.1	4.1	4.2	3.3	3.6	3.3	47.7
Heating Degree Days	1111	925	762	401	172	24	1	6	61	375	643	974	5455

Units:Temp °F, Precip in.

Figure 10: Example of climate statistics of a station.

Plot 30/90/365 day daily temperatures:

Climatological Products -> Temperature

When the user requests the climate temperature statistics of a station, graphs are displayed showing recent temperature observations and their comparison to climatology of the station (Figure 11). The user can change the graphs to show the past 30, 90, or 365 days of data by clicking on the respective link under "Change Plot to: "

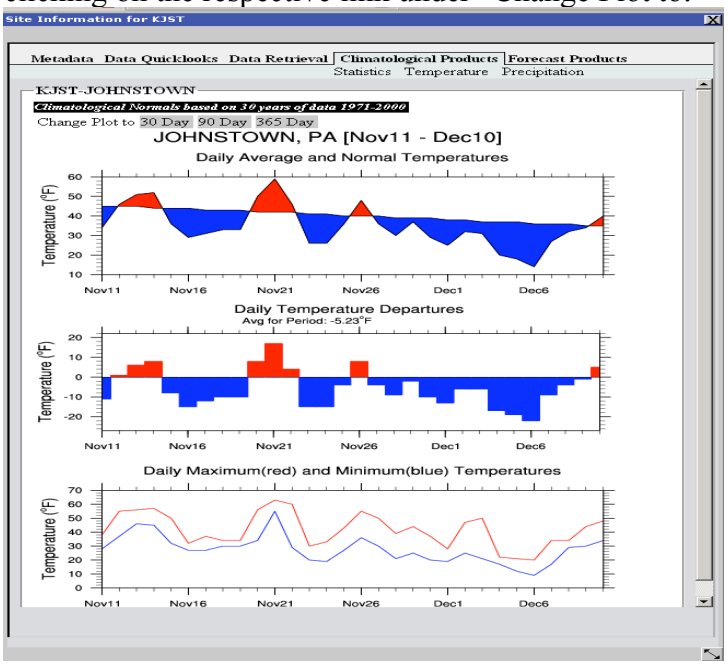


Figure 11: Example of *Climatological Products for Temperature*.

Plot 30/90/365 day daily precipitation:

Climatological Products -> Precipitation

When the user requests the climate precipitation statistics for a station, graphs are displayed showing recent precipitation observations and their comparison to climatology of the station (Figure 12). The user can change the graphs to show the past 30, 90, or 365 day data by clicking on the respective link under "Change Plot to: "

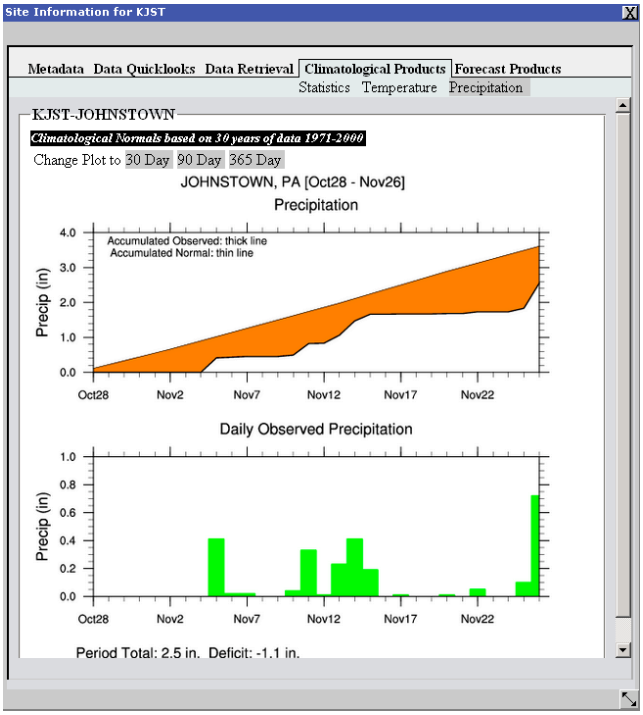


Figure 12: Example of *Climatological Products for Precipitation.*

Retrieve 5-day NWS forecast for a station:
Forecast Products -> NWS Forecast

Here you can view the National Weather Service 5-Day forecast for the station (Figure 13). This will show you expected conditions and temperature values for the forecasted days.

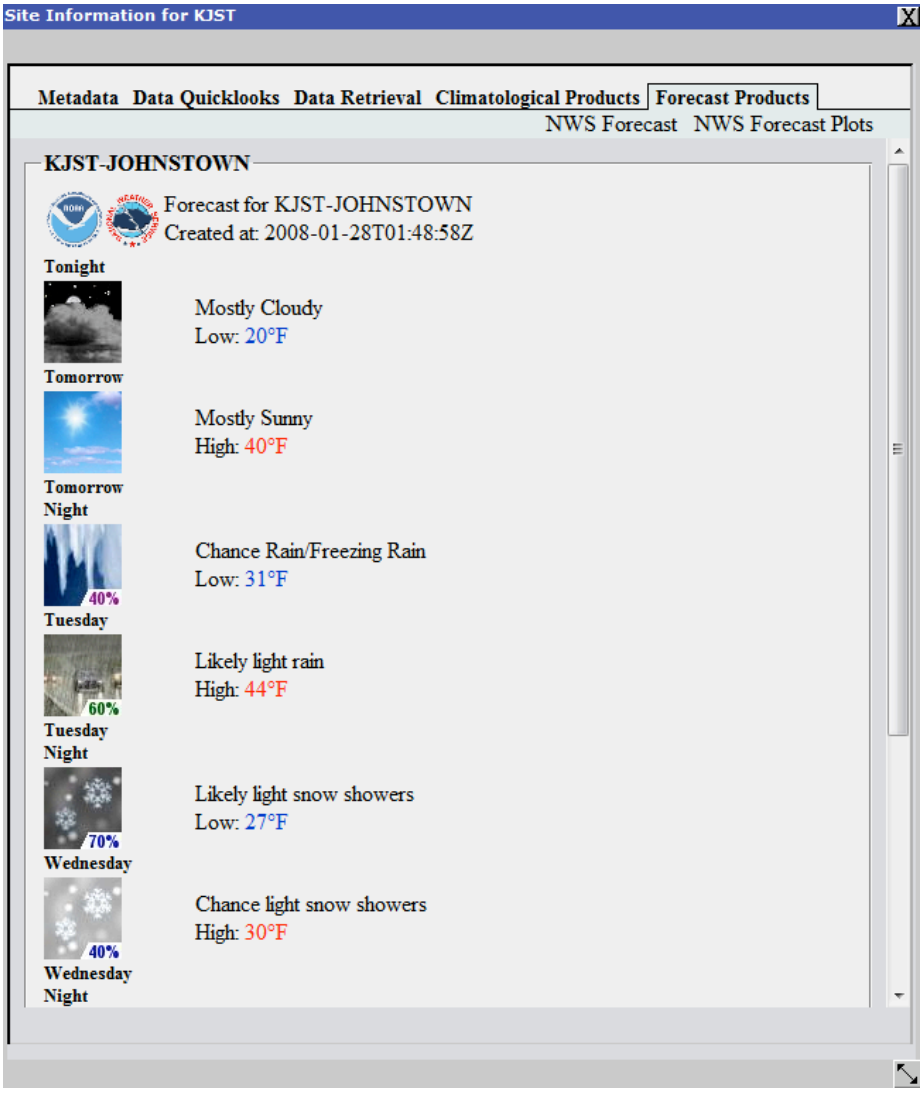


Figure 13: Example of NWS Forecast Product.

Plot hour-by-hour forecasts (temp, dwpt, wind) for a station:
Forecast Products -> NWS Forecast Plots

Here you can view the National Weather Service Forecast Plot for your station (Figure 14). This shows the data in two separate graphs that give the 7-Day forecast for Air/Dew point Temperature on one, and the 7-Day Wind Speed and Direction on the other.

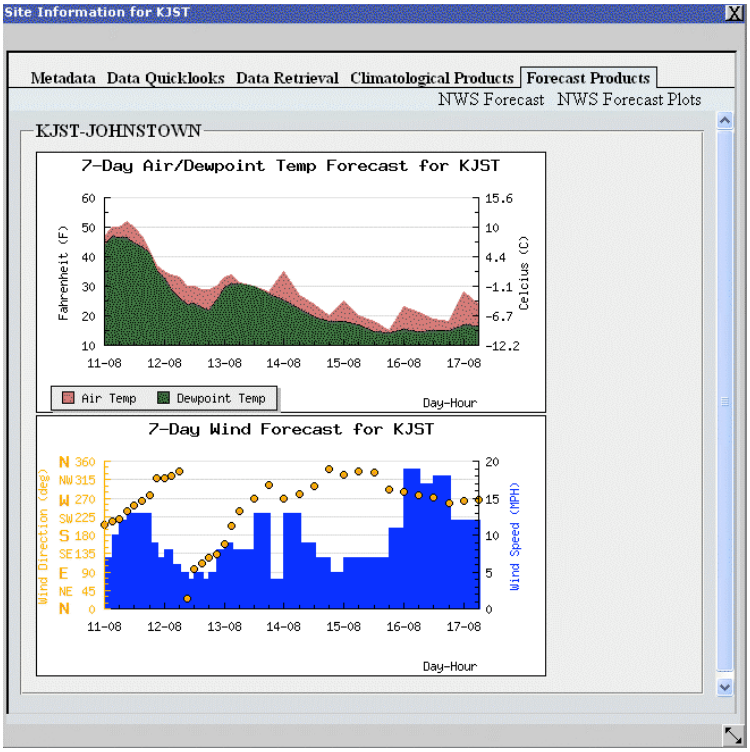


Figure 14: Example of NWS Forecast Plot.

Data retrieval (*.csv, *.xls, html):
The data retrieval function of this website gives the user the option of retrieving observed and archived data for a station (Figure 15). The user can select which variables to retrieve and can receive the data in one of three ways: as a webpage, as comma separated values, or as an Excel spreadsheet.

Click on *Data Retrieval* tab -> select date range, variables, and output format.

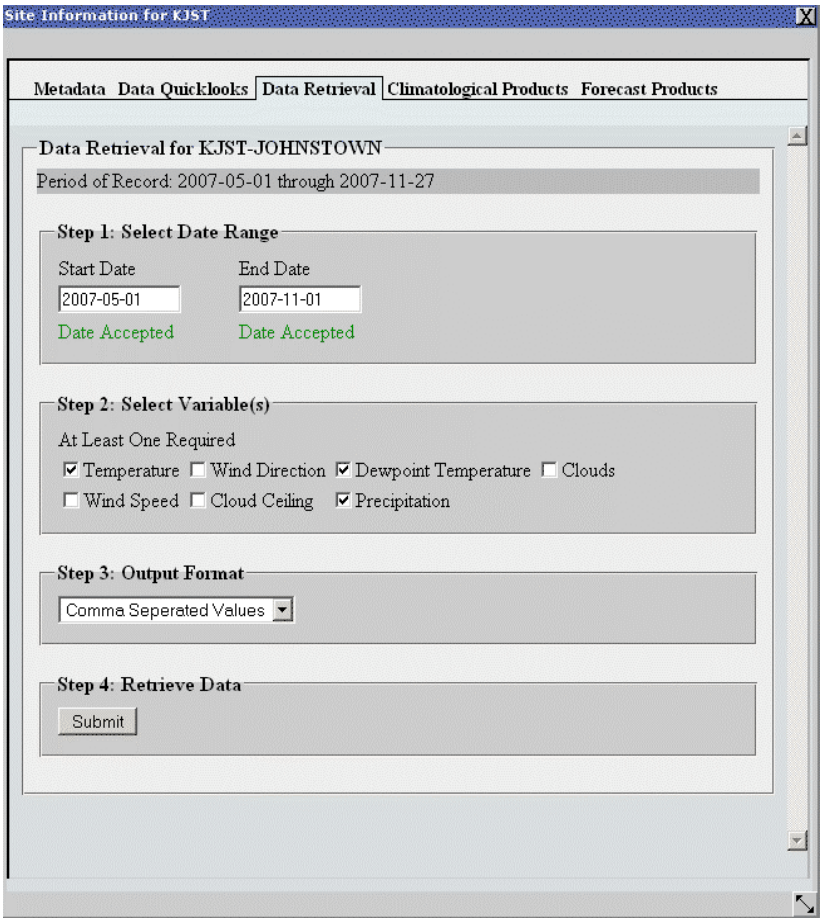


Figure 15: Example of *Date Retrieval* tab.

Locate closest site with wind roses*:

**Currently only for Pennsylvania*

http://climate.met.psu.edu/features/PA_WIND_ROSES/windrose.php

A wind rose (Figure 16) shows the average wind direction for an area over an extended period of time. These can be daily, monthly, yearly, or averages over multiple years.

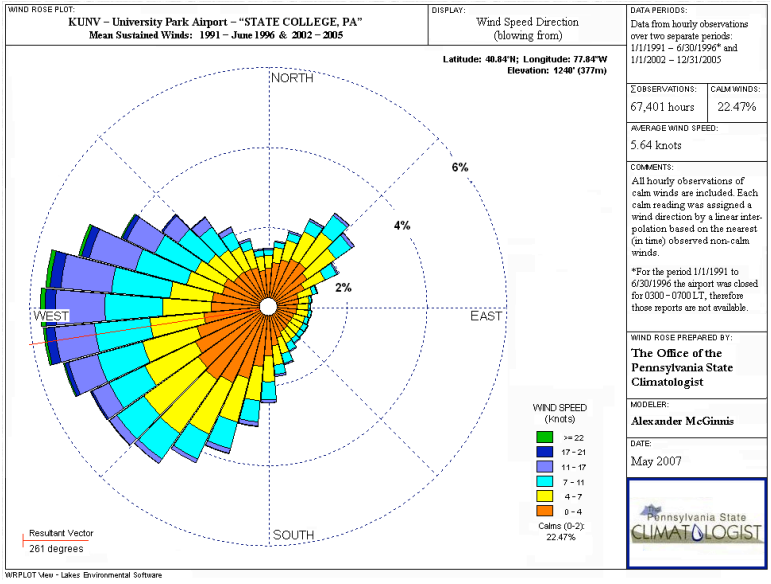


Figure 16: Example of a State College, Pa *Wind Rose* for about a 10 years period.

Distinguish between sites with different parameters

Example: Find only weather stations that report precipitation and report this parameter for more than a decade:

Choose the network and park you wish to query. Under *Filter Stations by Category*, click the ⊞ symbol to the left of *Parameter* and click the box that says *Precipitation*. Then click the ⊞ symbol to the left of *Period of Record* and click the boxes that are 10 years or above. The *park view* and respective weather stations will now be limited to stations that meet these criteria (Figure 17).

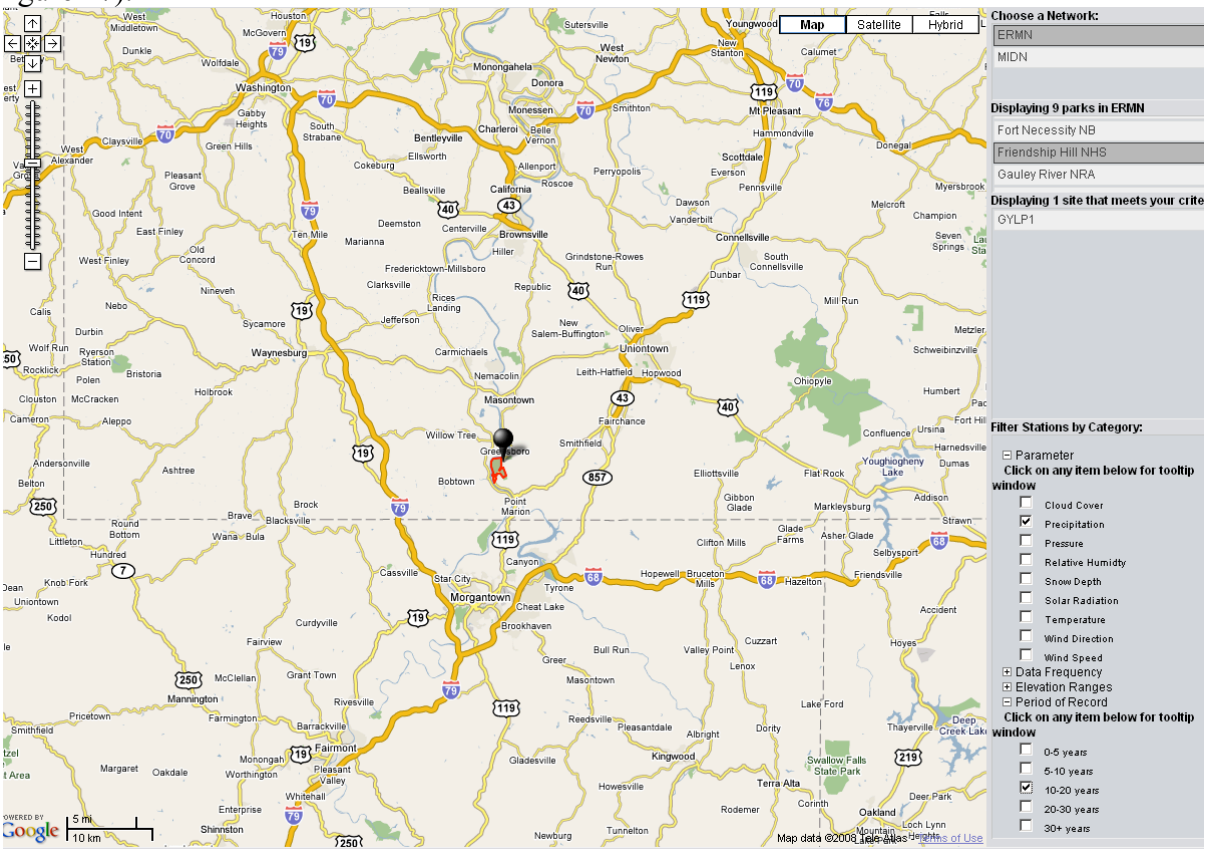


Figure 17: Shows and example of weather stations that report precipitation and report this parameter for more than a decade.